INCREASING CAPABILITY FOR INTEROPERABILITY -
UTAH DEPARTMENT OF HEALTH INTEROPERABILITY ASSESSMENT: FINDINGS AND RECOMMENDATIONS

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Health Informatics Program

Why Interoperability?

Siloed Databases
Difficult to exchange data and perform analyses, such as population health analysis, across heterogeneous data sources

National Push
Health Information Technology for Economic and Clinical Health (HITECH) Act and the Office of National Coordinator Federal Health IT Strategic Plan 2015-2020

Utah HIT Vision
Our statewide vision for health IT is for Utah to be a place where the secure and efficient exchange and use of electronic health information will result in improved health status, better health care, lower cost and healthier communities.

Utah Health IT Vision

"..Our health IT priority is to **improve system interoperability and portability** to support integration of physical and behavioral health care and improve population health for all Utahans."
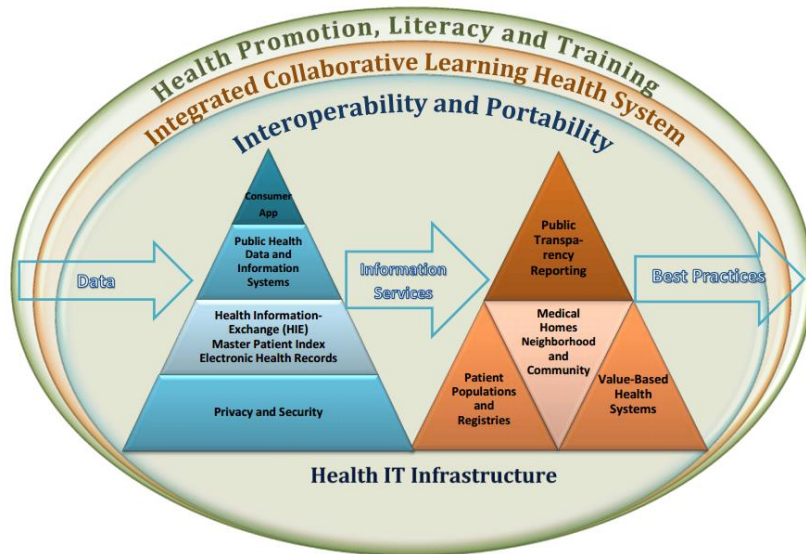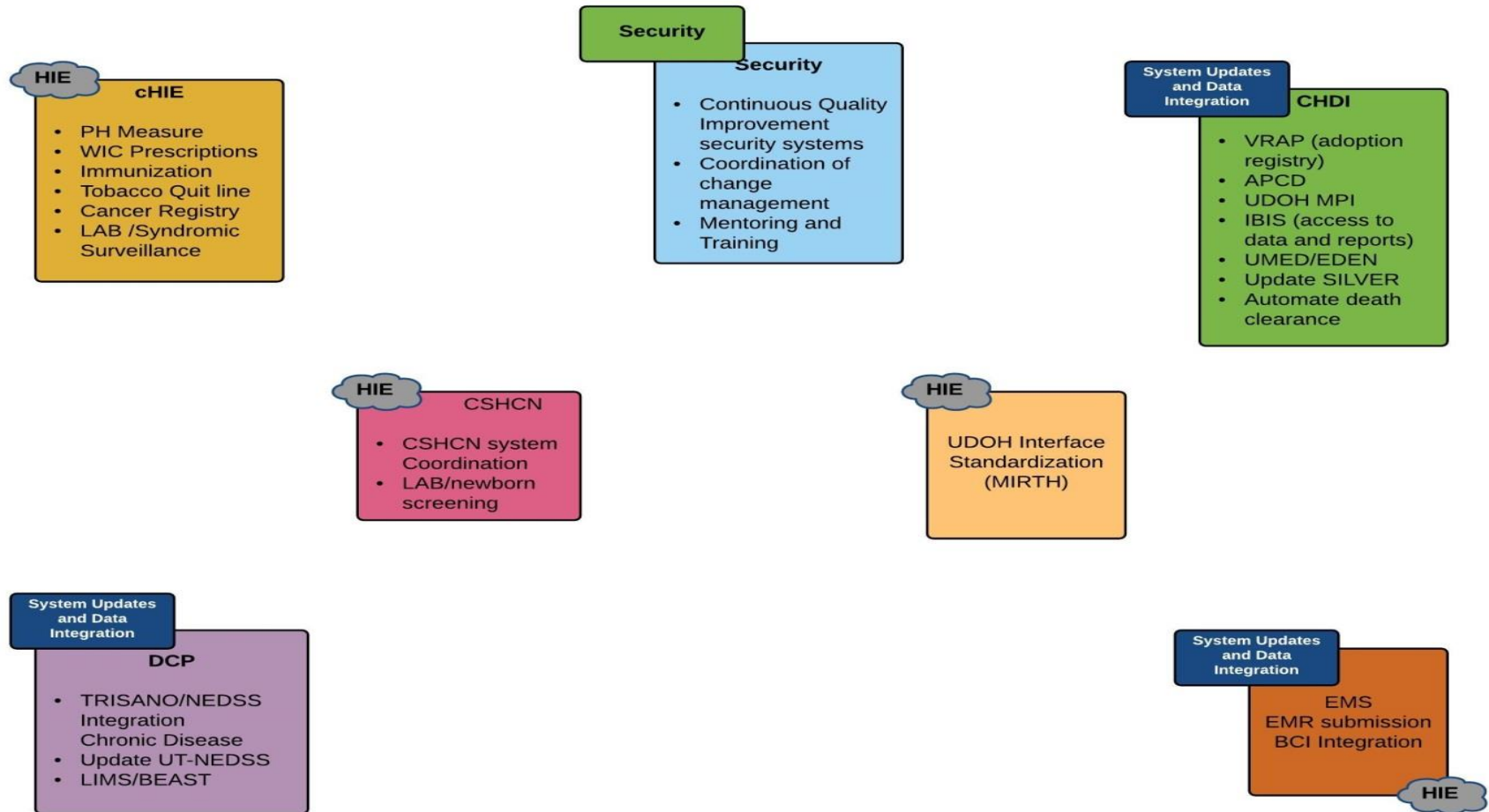
Interoperability Needs Assessment Purpose

- To capture a current state assessment of key UDOH public health information systems that are aligned to ongoing innovative projects and to:
  - Identify UDOH's current exchange partners
  - Understand UDOH's exchange needs
  - Assess systems readiness for interoperability
  - Assess organization's readiness for interoperability
  - Identify barriers that prohibits interoperability and data integration
  - Identify resources needed to increase levels of interoperability and integration

- Additionally, the vision of this project is to identify key UDOH informants to further explore the integration and interoperability needs at UDOH

System Interoperability Activities

Activity	Outcome
Cluster projects related to UDOH Strategic Plan Goals	Clustered innovative UDOH projects related to UDOH Strategic Plan Goals, "HIT Strategic Integration Matrix" document, and created a Word Cloud to visually show what was requested the most.
Conceptual Framework for UDOH Interoperability assessment	Visually depict the different data collection dimensions
Developed the interoperability instrument	The interoperability assessment tool was developed in REDCap and was based on the Levels of Information Systems Interoperability

HIT Integration Matrix
Clustered by Programs

HIE

cHIE
- PH Measure
- WIC Prescriptions
- Immunization
- Tobacco Quit line
- Cancer Registry
- LAB /Syndromic Surveillance

Security

Security
- Continuous Quality Improvement security systems
- Coordination of change management
- Mentoring and Training

System Updates and Data Integration

CHDI
- VRAP (adoption registry)
- APCD
- UDOH MPI
- IBIS (access to data and reports)
- UMED/EDEN
- Update SILVER
- Automate death clearance

HIE

CSHCN
- CSHCN system Coordination
- LAB/newborn screening

HIE

UDOH Interface Standardization (MIRTH)

System Updates and Data Integration

DCP
- TRISANO/NEDSS Integration Chronic Disease
- Update UT-NEDSS
- LIMS/BEAST

System Updates and Data Integration

EMS
EMR submission
BCI Integration

HIE

Activities

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**Data Partners
(UDOH Data Collection)**

**Utah Department of Health
Interoperability and Analytics Needs Assessment
Includes infrastructure, data sets and application.**
*For purposes of this project, the instrument will focus on
applications, data input, data output and exchange capabilities of an
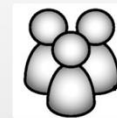information system*

**Data Partners
(Data Recipients from
UDOH)
Summary Data /
Reports / Publications**

Data Collection

Data Sets

**Health Information
Systems /
Applications**

Statistics

**Computational Infrastructure &
Analytic Tools**

Terminal   Models

Visualization(s)

Data Sent

☐ Who are our data exchange partners?
☐ What data do we collect?
☐ What is the frequency of the data exchange?
☐ What governance processes support this initiative
☐ What standards are used to exchange and
   represent the data?
☐ What data you currently do not have that could
   help you achieve your mission?
☐ What data would like to be exchanged?
☐ What challenges could we forsee in establishing
   better electronic exchange?

☐ How is the data stored and accessed?
☐ What procedures are in place to assure the quality of the data?
☐ What computational infrastructure and tools are used to analyze the data?
☐ How is that data represented? Are national standards used?
☐ How is data exchanged with partners?
☐ What are the future needs related to standards and electronic exchange capabilities?
☐ What are the futurebusiness analytics needs?

☐ Who do we send data to?
☐ How is the data sent?
☐ How is the data reported?
☐ What's the frequency of data sent and reports?
☐ What data is exchanged electronically now?
☐ What are the future data reporting needs?

**Cross cutting issues across all components
Policies
Infrastructure
Standards
Electronic Exchange Capabilities
Applications**

Activities

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C4ISR Architecture Working Group. "Levels of information systems interoperability (LISI)." US DoD (1998

Profile Categories

- System Data Flow
- Type of data exchanged
- Exchange Partners and Methods
- Standards for exchange
- Vocabulary—data representation
- Data Management and Quality Assurance
- Potential Exchange Partners
- Interoperability Levels
- Barriers/Challenges to data exchange
- Interoperability Resources Needed
- Analytic Needs

Inclusion/Exclusion Criteria

Approximately 147 Systems at UDOH
Source: DOHSI and HA Catalog

Exclude DMHF

Other exclusions

mapped systems to projects in the "HIT Integration Matrix"
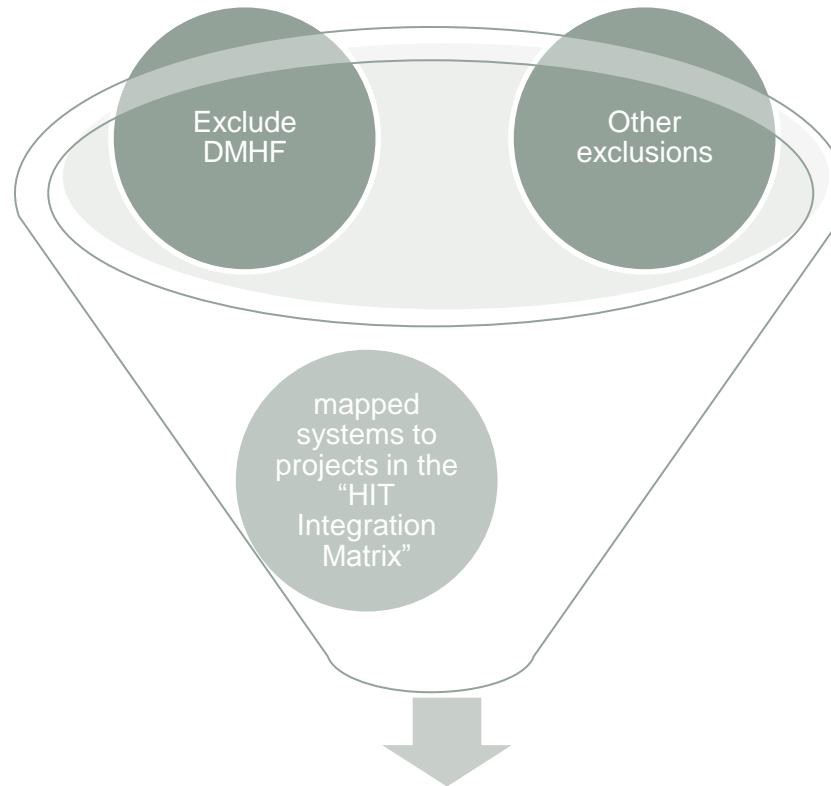
23 UDOH Systems

UDOH System of Interest by Division

Division	Number of Systems
Center for Health Data and Informatics	8
Division of Control and Prevention	10
Division of Family Health and Preparedness	5

High Level Findings

❑Interviewees had strong desire want to improve exchange capability with stakeholders (both internal and external to UDOH)

❑High variability in the methods used by UDOH systems to collect and report data
  ❑Not all stakeholders have capability

❑Variability of interoperability levels and use of standards

❑Many challenges to improving level of interoperability
  ❑ Resources (funding, appropriate skills)
  ❑UDOH-wide coordination around interoperability is needed

Current Exchange Partners

Current UDOH Information Exchange Partners
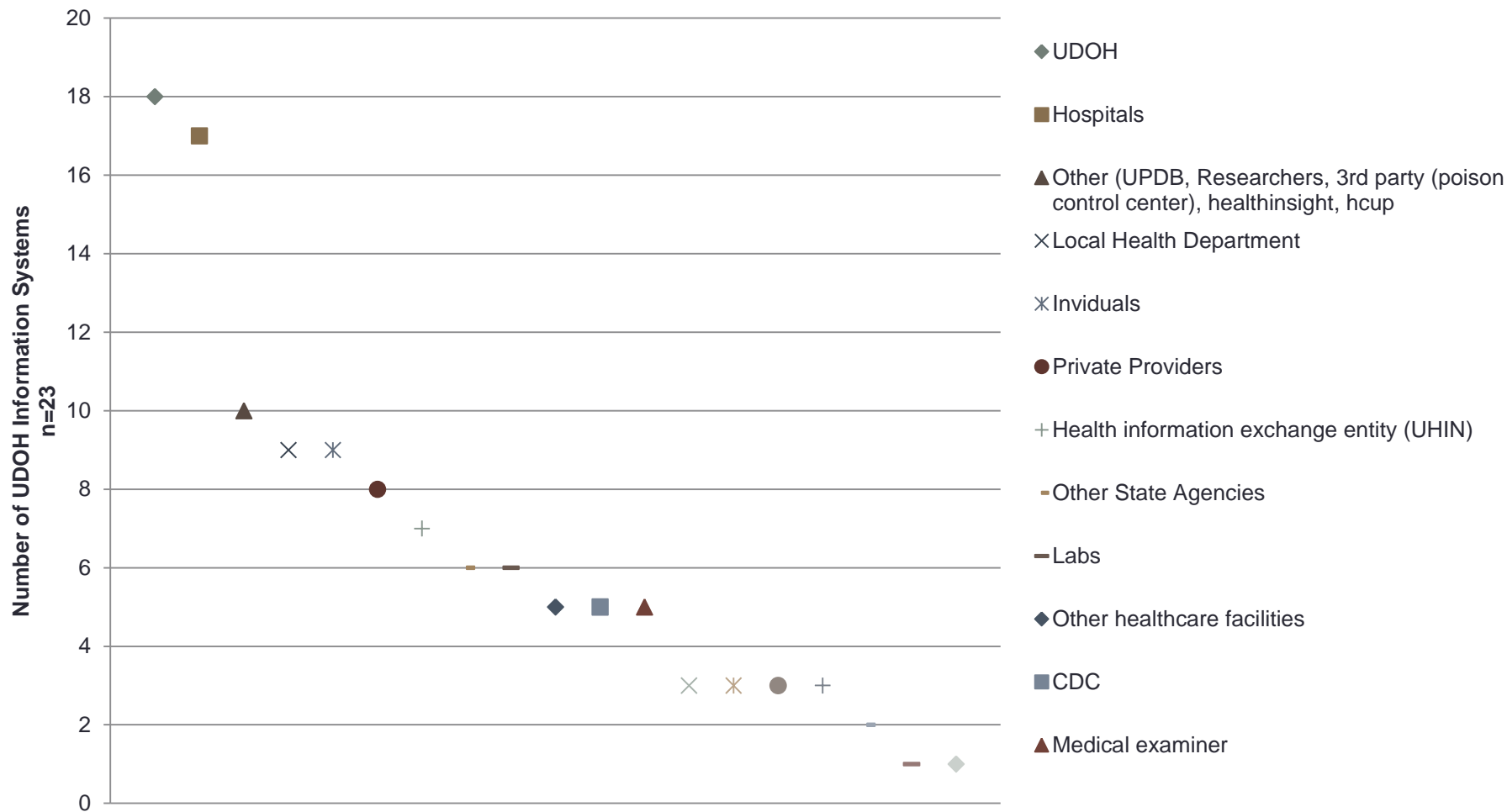
Desired Exchange Partners
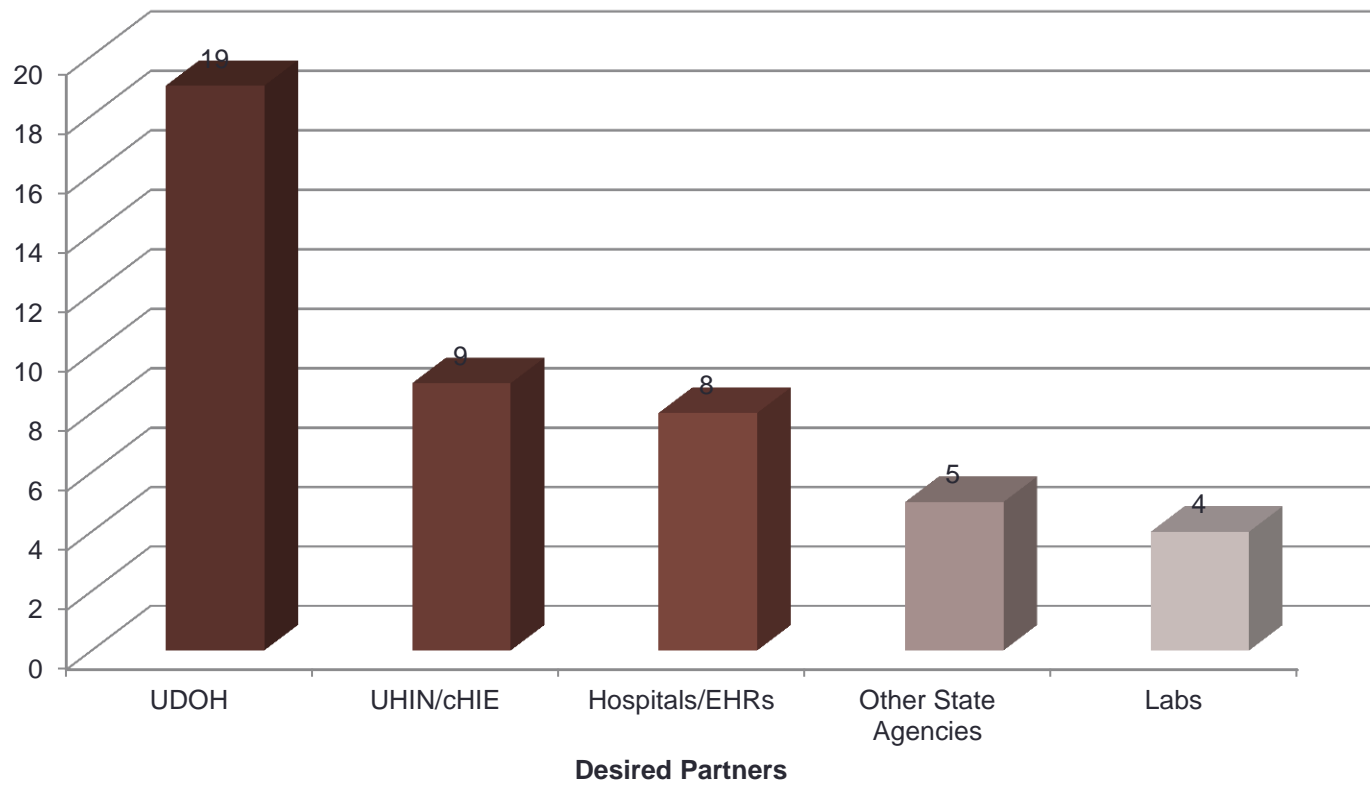
Current Linkage/Exchanges

A→ B
System A currently shares, links,
merges, or exchanges with System B
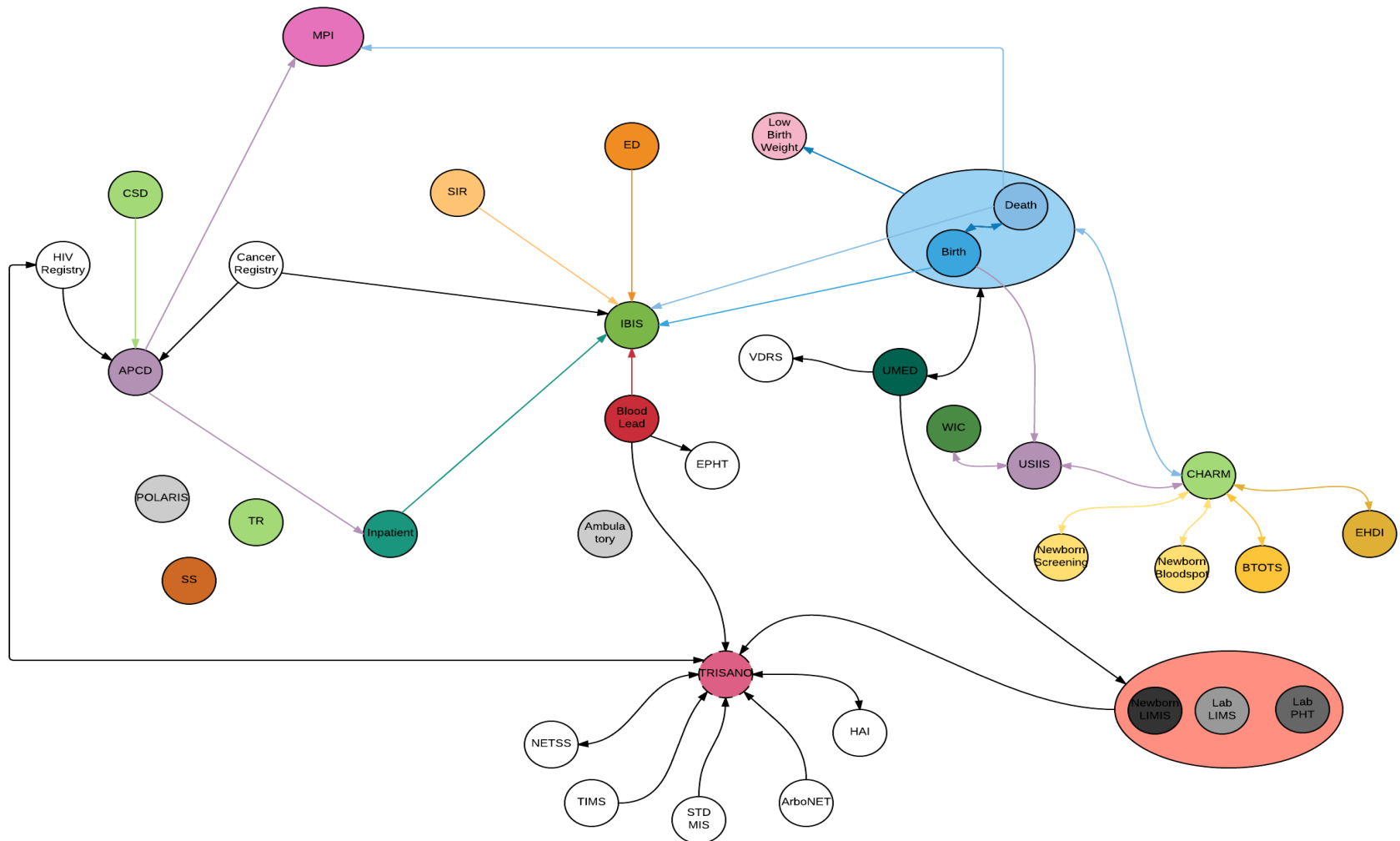
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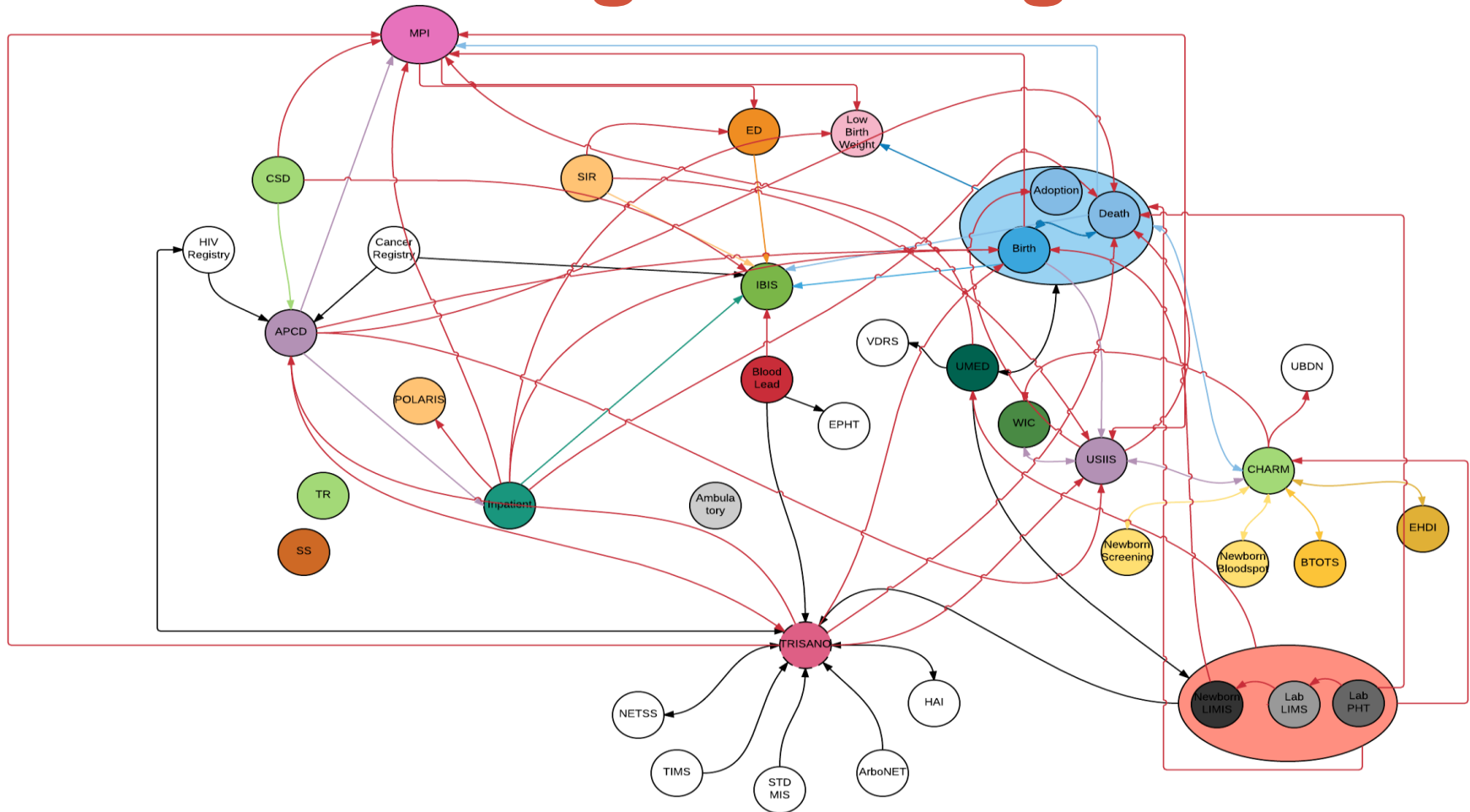
A → B
System A currently shares, links,
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Interoperability of UDOH's Systems

UDOH System Interoperability Level	Current/Capability
Level 1 Non electronic data- No use of IT to share information Examples include paper, mail, and phone call.	0
Level 2 Machine transportable data Examples include fax, email, and unindexed documents.	5
Level 3 Machine Organizable Data Structured messages, unstructured content. Human action required.	12
Level 4 Machine interpretable Data Structured messages, standardized content- including HL7 messages No human action required.	6

The Center for Information Technology at the National Institutes of Health Four Levels of Data Interoperability

Utilization of Standards
Exchange and Representation of Data

Data Exchange Standards
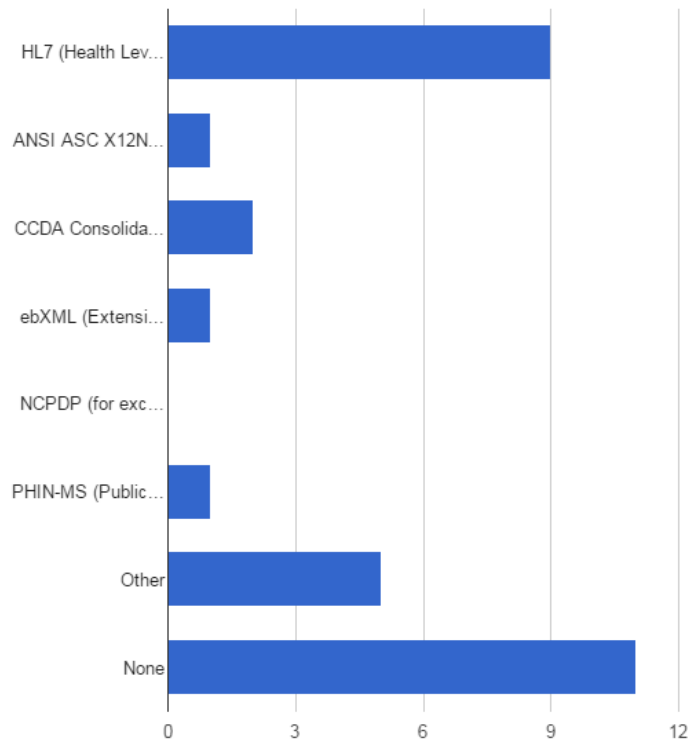
Standards for representation of data

- – 20 of 23 systems: Use national standards for certain fields for data representation
- – 1 system: Use locally defined codes
- – 2 systems: No standards/codes

Barriers to Electronic Exchange

Chart legend:
- Information system provided by another organization (e.g., CDC) and unable to modify
- Various data streams / information systems based on funding
- Lack of interest/perceived need by team
- Lack of management / IT support to make this a priority
- Lack of understanding of what needs to be done
- Lack of available standards to allow for interoperability
- Lack of resources
- Other (specify)

Values: 5, 10, 11, 12, 14, 6, 17, 3

Perceived Barriers

Resources Needed for Electronic Exchange
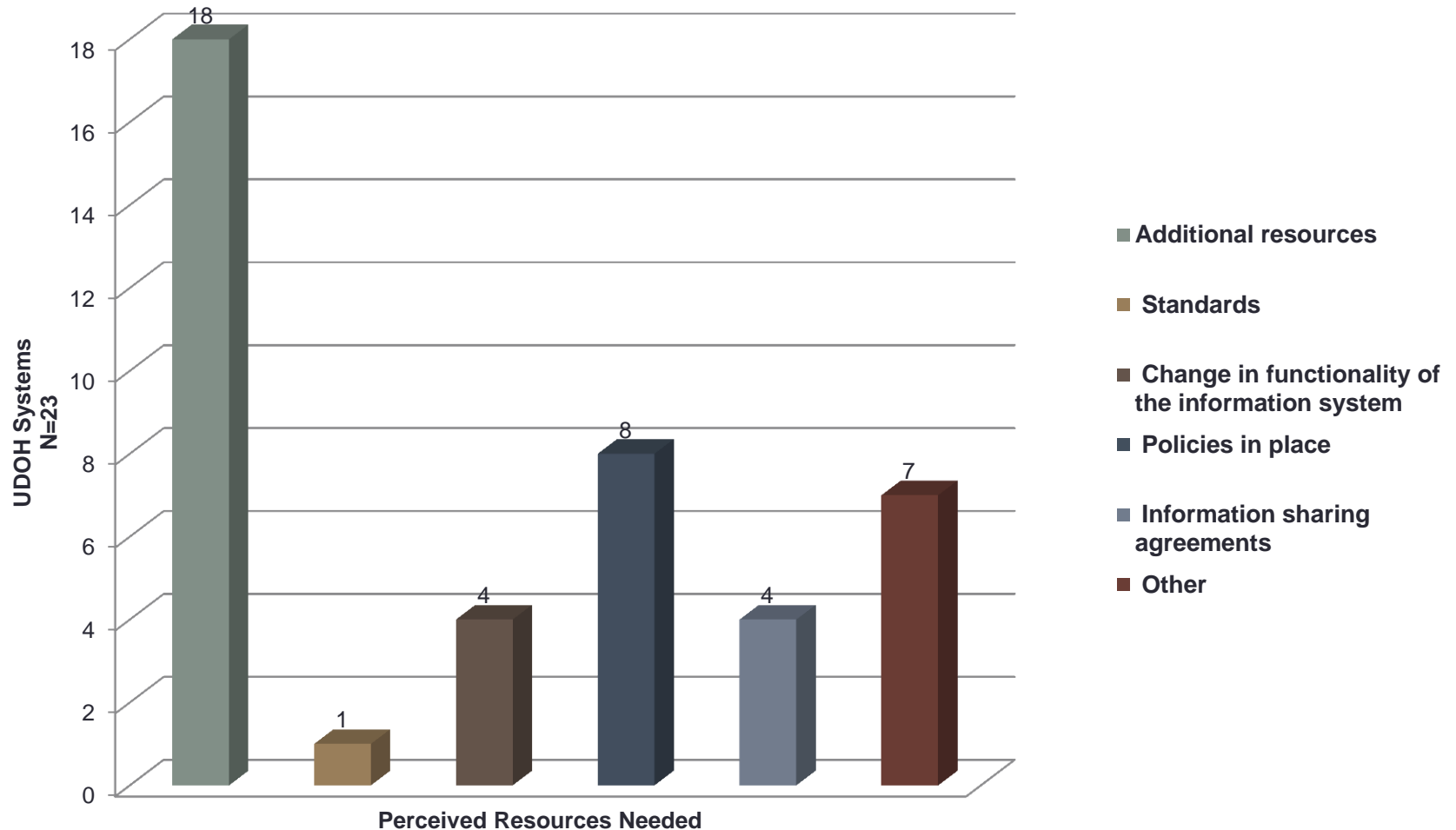
Resources Needed

- An agency wide strategic plan for interoperability

- Staff with appropriate skills

- Clarification on who can access data

- Department-wide commitment

Organization Level Assessment
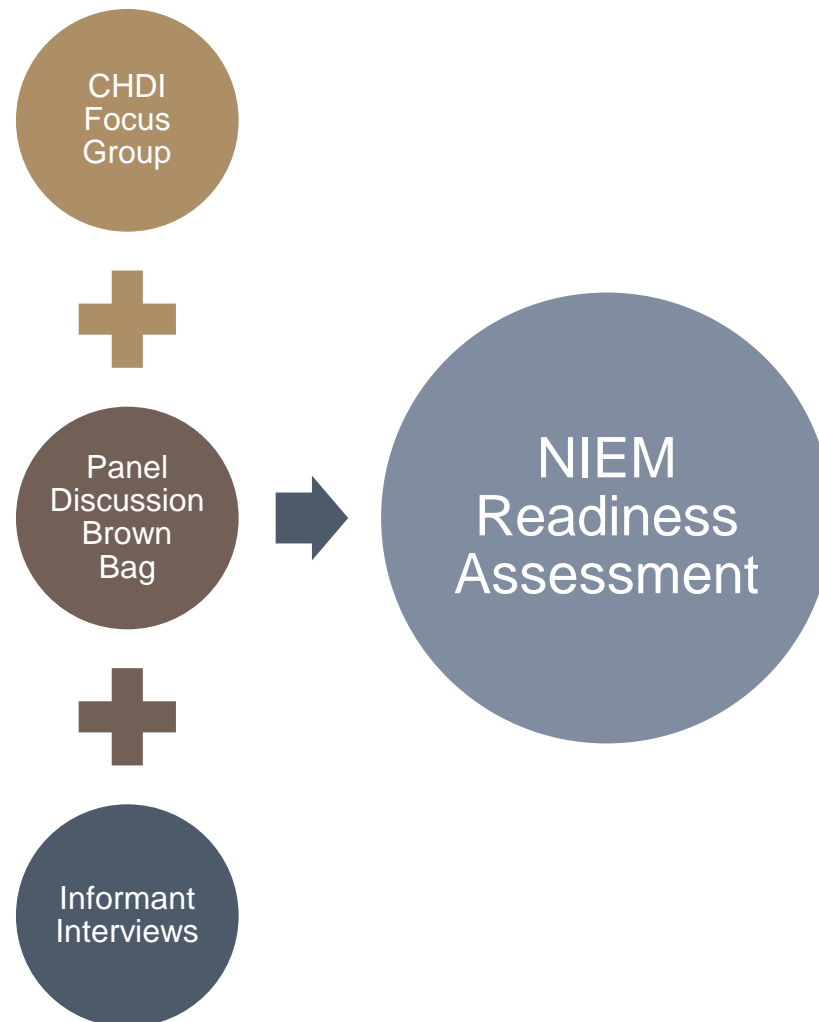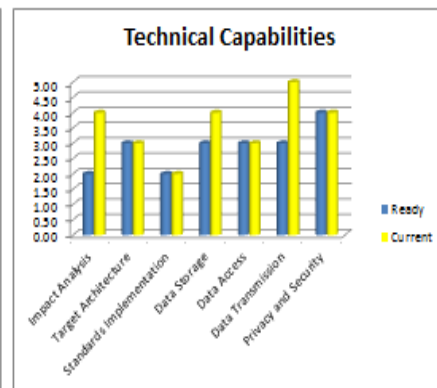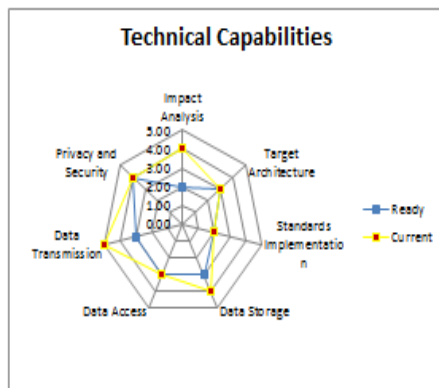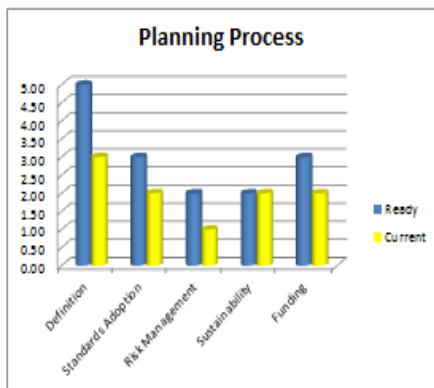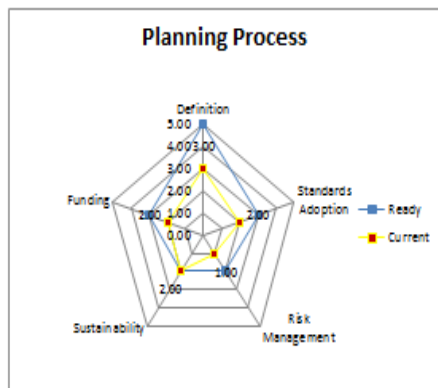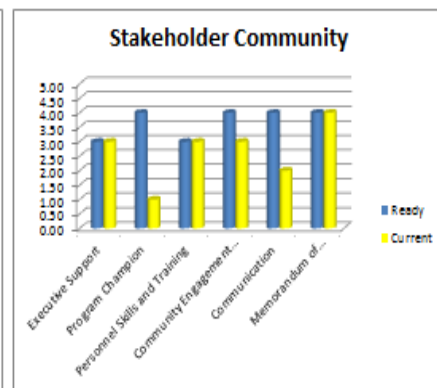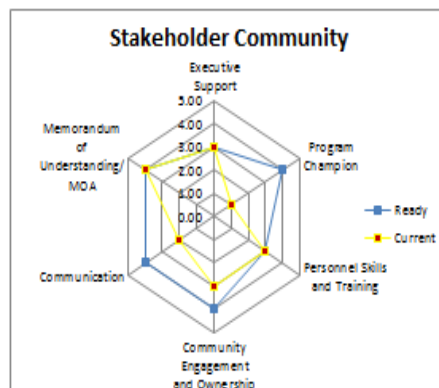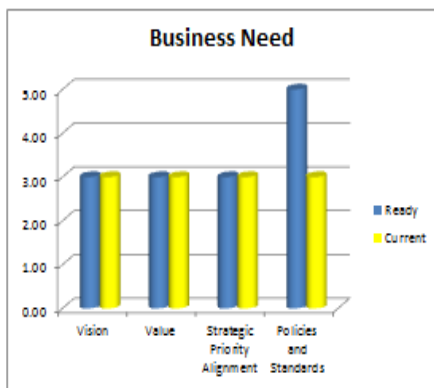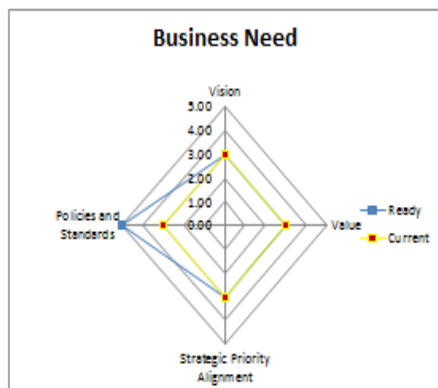
Recommendations

1. *UDOH – wide coordinated approach to promote better data integration and interoperability both internal and external exchange partners*
2. *Streamline internal data sharing agreements*
3. *Metadata Management*
4. *Terminology Management*
5. *Continue developing standards based systems*
6. *Develop UDOH common data model*
7. *Encourage support of multiple approaches to integration*
8. *Shared Resources*
9. *Share lessons learnt*
10. *Training, Skills, Training!*

Discussion

- Any thoughts?

- How to implement recommendations?

Thank You ☺